OCEAN GALES AND STORMS, JUNE, 1928

Vessel	Voyage		Position at time of lowest barometer		Gale began	Time of lowest barometer	Gale ended	Lowest barometer	Direction of wind when gale began	Direction and force of wind at time of lowest barometer	Direction of wind when gale ended	Highest force of wind and direction	Shifts of wind near time of lowest barometer
	From—	To—	Latitude	Longitude									
NORTH ATLANTIC OCEAN			° ′	° ′				*Inches*					
Saucon, Am. S. S.	Valencia, Spain.	New York	40 20 N.	18 31 W.	June 2	8p, 3	June 4	29.31	SSW.	WNW., 7	WNW.	SW., 9	SSW. WNW.
Steel Worker, Am. S. S.	New York	Port Said	38 46 N.	24 49 W.	7	7p, 7	8	29.34	S.	SSW., 9	WSW.	—, 9	SSW. WSW.
Sylvafield, Br. M. S.	Canal Zone	Hamburg	48 26 N.	16 14 W.	8	3p, 8	9	28.74	ENE.	NE., 9	N.	N., 9	NE. NNW.
Abercos, Am. S. S.	London	Galveston	49 20 N.	8 32 W.	8	11a, 9	10	29.09	S.	S., 10	SW.	S., 10	Steady.
Hamburg, Ger. S. S.	Channel	New York	43 47 N.	42 25 W.	14	8a, 14	15	29.45	SE.	SSE., 8	NW.	SSE., 10	SE. SSW.
Nieuw Amsterdam, Du. 08. S.	Rotterdam	do	41 41 N.	46 18 W.	15	3a, 15	15	29.40	WNW.	NW., 7	NW.	WNW., 9	
Arminco, Belg. S. S.	Port Arthur	Mediterranean.	37 50 N.	30 09 W.	15	11p, 15	16	29.84	S.	SSW., 8	WSW.	S., 9	S. WSW.
Mercer, Am. S. S.	Rotterdam	New York	47 15 N.	31 00 W.	20	9p, 20	21	29.66	WSW.	—, 9	W.	WNW., 10	WSW. W.
Gonzenheim, Ger. S. S.	Emden	Portland, Me.	50 00 N.	22 10 W.	20	4p, 20	22	29.25	S.	S., 7	SW.	W., 10	
Rathlin Head, Br. S. S.	Bremen	Montreal	58 44 N.	19 30 W.	22	—, 22	22	29.29	WNW.	NNW., 9	NW.	—, 9	
Lubrafol, Belg. S. S.	Port Arthur	Hamburg	48 37 N.	19 45 W.	24	2p, 24	25	29.59	SE.	SE., 10	SW.	S., 10	SE. S. W.
Columbus, Ger. S. S.	Plymouth	New York	49 45 N.	11 17 W.	25	4p, 25	26	29.48	S.	W., 8	NNW.	NW., 10	SW. WNW.
Gulfking, Am. S. S.	Beverly, Mass	Port Arthur	38 00 N.	70 51 W.	30	4a, 30	30	29.84	SSW.	SSW., 8	SW.	—, 9	Steady.
NORTH PACIFIC OCEAN													
Hayo Maru, Jap. S. S.	Muroran	Vancouver	44 29 N.	150 34 E.	4	4p, 4	5	29.54	NNE.	N., 8	NNW.	N., 9	NNE.-N.
California, Am. S. S.	Portland	Aomori, Japan	51 05 N.	178 40 W.	4	8p, 5	5	29.22	S.	SSE., 7	SSE.	SSE., 9	Steady.
Nora, Am. S. S.	San Pedro	Balboa	13 45 N.	95 14 W.	5	Noon	5	29.67	NE.	S., —	SW.	SE., 10	NE.-SE.-SW.
Eldridge, Am. S. S.	Philippines	Puget Sound	19 30 N.	127 18 E.	13	8p, 13	13	29.50	NW.	NW., 5	WNW.	NW., 8	NW.-SW.
Calmar, Am. S. S.	San Pedro	Balboa	17 06 N.	100 26 W.	16	9a, 16	17	29.65	ESE.	ESE., 7	SW.	SW., 8	ESE.-SW.
Canadian Miller, Br. S. S.	Union Bay	Panama	19 04 N.	105 13 W.	17	Noon	17	29.68	SE.	SE.	E.	SE., 8	SE.-E.
Crosskeys, Am. S. S.	Dairen	San Francisco	45 25 N.	172 15 W.	22	8a, 23	23	29.03	NE.	S., 6	S.	NE., 9	
Silvercedar, Br. M. S.	Philippines	do	41 54 N.	167 18 W.	22	Noon, 22	23	29.57	ESE.	SSW., 8	SSW.	SSW., 9	Steady.
Pacific Commerce, Br. M. S.	Yokohama	Portland	40 56 N.	152 40 E.	25	8a, 26	26	29.23	ENE.	NNW., 9	NW.	NNW., 9	ENE.-NNW.
Akibasan Maru, Jap. S. S.	do	San Francisco	48 00 N.	177 45 W.	28	Noon, 28	29	29.51	ESE.	ENE., 9	NE.	NE., 9	
SOUTH PACIFIC OCEAN													
Sonoma, Am. S. S.	San Francisco	Sydney	33 25 S.	152 00 E.	14	—, 14		29.24	SSE.	SSE., 11			Steady.

NORTH PACIFIC OCEAN

By WILLIS E. HURD

The center of the Aleutian cyclone, which had been situated for several months over the northwestern waters of the Gulf of Alaska, drifted to the westward, and in June lay over the middle Aleutians, lowest average pressure 29.80 inches, at Dutch Harbor. Over most of the region usually more or less subject to the influence of this great depression, the barometric average this month was practically normal, except at Dutch Harbor, where it was a fifth of an inch below.

The North Pacific anticyclone was stable and highly developed throughout the month, central near 40° N., 145° W.

Pressure data for several island and American coast stations in west longitudes are given in the following table:

TABLE 1.—*Averages, departures, and extremes of atmospheric pressure at sea level at indicated hours, North Pacific Ocean, June, 1928*

Stations	Average pressure	Departure from normal	Highest	Date	Lowest	Date
	Inches	*Inch*	*Inches*		*Inches*	
Dutch Harbor [1]	29.80	−0.19	30.28	26th	29.06	24th.
St. Paul [1 2]	29.86	−0.03	30.36	28th	29.24	24th.
Kodiak [1]	29.91	−0.03	30.36	6th [6]	29.54	24th.
Midway Island [1 3]	30.03	−0.04	30.28	2d	29.72	7th.
Honolulu [4]	30.01	−0.03	30.09	9th	29.87	6th.
Juneau [4]	30.03	+0.02	30.27	7th	29.73	11th.
Tatoosh Island [4 5]	30.02	−0.03	30.23	5th	29.76	20th.
San Francisco [4 5]	29.90	−0.06	30.03	14th	29.64	18th.
San Diego [4 5]	29.87	−0.02	29.96	12th	29.73	17th.

[1] P. m. observations only.
[2] For 29 days.
[3] For 27 days.
[4] A. m. and p. m. observations.
[5] Corrected to 24-hour mean.
[6] And on other date.

Although fewer gales, exceeding force 8, occurred in June than in May, yet the number of days with gales increased, especially over the middle portion of the upper steamship routes, owing to the unusual energy, for the season, of the cyclone over the central Aleutians. Most of the gales, however, were of a very moderate character, only a small number exceeding 8 in force, and none of them exceeding force 10. Moderate gales occurred along the California and Oregon coasts on the 12th, 17th, and 18th, due to intensification of the gradients existing there between the oceanic anticyclone and the low-pressure region over the continent.

Several depressions, or cyclones, of no great energy, some tropical and others of continental origin, appeared over the waters of the Far East. A few were accompanied by local gales of force 8 or 9 between Japan and longitude 160° E., and one caused a moderate northwesterly gale northeast of Luzon on the 13th. Otherwise so far as known none was productive of high winds.

The severest gale reported for the entire ocean occurred south of the Gulf of Tehuantepec on the 5th. Mr. B. Vieda, second officer and observer of the American steamer *Nora*, which encountered this wind, said of it that at 11 a. m. it "reached force 10 and kept hauling from northeast to east to southeast to south at the same force until 1:30 p. m. Heavy rain and large rough sea during the blow." The barometer at the time read 29.67 inches, which showed a depression of about two-tenths of an inch from earlier and following readings, showing that a cyclonic disturbance was at hand. Other gales, but of a more moderate character, produced by active depressions off the Mexican coast, occurred between Salina Cruz and Manzanillo on the 17th, 18th, and 25th.

Concerning the weather off this coast, Mr. J. L. Kilburn, second officer and observer of the British freighter *General Smuts*, makes the following comment:

> From the 13th to 18th June a heavy confused swell running from a southwest to northwest direction was encountered, wind SW./WSW., force 4–6, barometer 29.70–29.80; overcast, with frequent squalls of torrential rain. This is the first time we have encountered this weather on this track—a comparatively moderate wind, steady in direction, accompanied by such a short, heavy, confused swell of such long duration and covering so big an area (3½° N.–16½° N. lat., 89° W.–103° W. lon.).

The northeast trades were steady throughout the month. At Honolulu the prevailing direction was from the east, the maximum velocity being at the rate of 22 miles an hour, from the east, on the 18th.

Fog was frequent and had increased slightly in the number of days of occurrence since May over the west-

ern half of the upper steamship routes. Over the eastern half the increase was vastly greater, the percentage over some portions of the area between 45° and 55° N., 150° and 60° W., rising to 40 or higher where there was little or no fog reported on the preceding month. Scattered fog occurred along all the American coast north of the twentieth parallel and was as frequent off Cape San Lucas as at any point above it. In Bering Sea fog was reported at St. Paul Island on 13 days.

Storm at Valparaiso, Chile.—According to the New York Maritime Register of June 6, 1928, one of the severest storms of years at Valparaiso occurred there a few days previously. The Grace Line's new motorship *Santa Maria* arrived there on May 31 during a storm of such violence that she was unable to begin discharging cargo. The gale did not abate until June 2. Seven small craft were reported wrecked in the harbor, and a quantity of merchandise lost, during the three days' storm.—*W. E. Hurd.*

Southwest monsoon—Sand haze.—Several vessels in the western part of the Arabian Sea experienced an unusually strong southwest monsoon during June. The heaviest winds, which at times attained the force of a whole gale, were reported on the 13th and 14th between 10° and 15° north latitude, 55° and 60° east longitude.

On several days of the month very thick weather due to sand haze overhung the lower part of the Red Sea and the Gulf of Aden.—*W. E. Hurd.*

CLIMATOLOGICAL TABLES[1]

CONDENSED CLIMATOLOGICAL SUMMARY

In the following table are given for the various sections of the climatological service of the Weather Bureau the monthly average temperature and total rainfall; the stations reporting the highest and lowest temperatures, with dates of occurrence; the stations reporting the greatest and least total precipitation; and other data as indicated by the several headings.

The mean temperature for each section, the highest and lowest temperatures, the average precipitation, and the greatest and least monthly amounts are found by using all trustworthy records available.

The mean departures from normal temperatures and precipitation are based only on records from stations that have 10 or more years of observations. Of course, the number of such records is smaller than the total number of stations.

Condensed climatological summary of temperature and precipitation by sections, June, 1928

Section	Temperature								Precipitation					
			Monthly extremes								Greatest monthly		Least monthly	
	Section average	Departure from the normal	Station	Highest	Date	Station	Lowest	Date	Section average	Departure from the normal	Station	Amount	Station	Amount
	°F.	°F.		°F.			°F.		*In.*	*In.*		*In.*		*In.*
Alabama	76.0	−2.3	Eufaula	99	20	Valley Head	50	7	10.16	+5.90	Citronelle	17.89	Alaga	3.14
Arizona	75.9	−0.2	2 stations	117	[2]6	Spring Valley ranger station.	21	13	0.03	−0.36	Cedar Glade	1.07	80 stations	0.00
Arkansas	73.5	−3.6	Amity	100	[2]19	Dutton	40	6	9.44	+5.42	Pocahontas	17.16	Amity	4.01
California	67.8	+0.4	Greenland Ranch	120	7	Helm Creek	20	29	0.09	−0.22	Steele Swamp	1.67	135 stations	0.00
Colorado	57.6	−3.6	2 stations	100	[2]16	Pearl	17	13	2.15	+0.62	Peetz	8.84	Ignacio	0.00
Florida	79.4	−0.5	Mount Pleasant	101	20	Hilliard	53	8	6.76	+0.17	St. Leo	12.61	Crescent City	2.23
Georgia	76.8	−1.2	Eastman	105	20	Blue Ridge	43	8	5.93	+1.52	Clayton	10.56	Dublin	2.82
Idaho	57.8	−2.4	Orofino	103	25	Smith Ferry	21	5	1.15	−0.20	Big Springs	3.41	Bogus Creek	T.
Illinois	66.9	−5.0	Jacksonville	93	12	Mount Carroll	35	10	7.25	+3.38	Anna	18.21	Pontiac	3.33
Indiana	65.8	−5.8	Collegeville	92	30	2 stations	35	3	7.05	+3.22	Evans Landing	13.18	Huntington	2.79
Iowa	64.5	−4.8	4 stations	88	20	Mason City	31	2	5.38	+0.89	Keosauqua	10.31	Cherokee	2.31
Kansas	67.3	−6.0	Richfield	97	7	Healy	37	5	7.35	+3.47	Oswego	16.49	Elkhart	2.03
Kentucky	69.5	−4.4	Williamsburg	93	[2]19	2 stations	45	8	10.88	+6.79	Paducah	19.22	Sergent	3.50
Louisiana	78.9	−1.2	2 stations	97	[2]1	4 stations	53	6	9.85	+5.04	Franklin	19.06	Shreveport	3.30
Maryland-Delaware	69.1	−1.8	Coleman, Md	94	14	Oakland, Md	34	1	5.78	+1.85	Chewsville, Md	11.57	Takoma, Md	2.45
Michigan	59.6	−4.4	Houghton Lake	89	22	Wolverine	20	3	4.53	+1.47	Yale	10.50	Whitefish Point	1.32
Minnesota	60.1	−4.1	Beardsley	93	26	Meadowlands	22	3	3.99	−0.27	Tower	7.35	Montevideo	1.44
Mississippi	77.4	−1.4	Aberdeen	100	20	Lake	52	6	9.34	+5.11	Fruitland Park	20.76	Holly Bluff	2.50
Missouri	67.7	−5.8	Nevada	91	21	Mountain Grove	40	6	11.17	+6.50	Jackson	22.00	Hannibal	5.08
Montana	56.1	−3.4	Heron	94	25	Conway's ranch	21	9	3.27	+0.67	Adel	11.37	Columbia Falls	1.06
Nebraska	63.0	−6.3	2 stations	96	30	Gordon	27	10	4.63	+0.83	Sidney	7.74	Wakefield	1.71
Nevada	64.7	−0.7	Logandale	112	6	2 stations	21	18	0.43	−0.07	Hylton	2.14	8 stations	0.00
New England	61.4	−2.2	North Grosvenor Dale, Conn.	91	15	Pittsburg "A," N. H.	28	15	4.79	+1.46	Chesterfield, Mass.	9.22	Berlin, N. H.	2.07
New Jersey	66.6	−1.7	2 stations	93	14	Charlotteburg	36	11	6.75	+2.96	Culvers Lake	10.34	Atlantic City	3.03
New Mexico	68.7	−0.1	Carlsbad	110	27	Luna ranger station	25	[2]12	0.57	−0.82	Quay	5.16	41 stations	0.00
New York	62.4	−2.5	Dansville	92	13	2 stations	28	[2]16	6.13	+2.45	Jamestown	11.00	Gabriels	1.83
North Carolina	73.0	−0.5	Goldsboro	106	20	Mount Mitchell	33	7	5.49	+0.76	Rock House	10.53	Hatteras	1.46
North Dakota	58.2	−4.6	Melville	92	30	Melville	24	8	5.07	+1.57	Stowers	10.61	Power	1.88
Ohio	65.0	−4.6	2 stations	92	[2]12	Garfield	32	3	6.79	+3.04	Pleasant Hill	9.93	Danbury	3.81
Oklahoma	74.3	−2.9	3 stations	107	[2]18	2 stations	40	4	6.26	+2.35	Wyandotte	15.43	Fort Reno	1.30
Oregon	59.9	−0.5	4 stations	105	24	Fremont	19	8	0.91	−0.35	Welches	4.46	Hermiston	T.
Pennsylvania	65.5	−2.7	Phoenixville	93	14	Wellsboro	30	12	7.96	+3.86	West Chester	13.14	Erie	3.96
South Carolina	76.0	−1.5	2 stations	102	21	3 stations	47	8	5.58	+0.75	Camden	13.94	Marion	2.71
South Dakota	61.3	−4.7	Vivian	95	5	Pollock	28	10	4.05	+0.42	Timber Lake	7.58	Pierre	2.18
Tennessee	71.8	−2.7	Etowah	96	[2]19	Sewanee	39	7	10.18	+5.81	Dresden	18.67	Memphis	3.96
Texas	80.1	0.0	Spur	113	28	Romero	40	4	3.91	+0.64	Winfield (near)	14.52	4 stations	0.00
Utah	62.4	−2.1	2 stations	108	[2]20	Park City	20	18	0.63	+0.02	Ibapah	2.84	9 stations	0.00
Virginia	70.2	−1.6	2 stations	98	[2]20	Burkes Garden	36	[2]1	5.09	+0.95	Lincoln	8.11	Roanoke	2.22
Washington	60.7	0.0	3 stations	105	[2]24	Bumping Lake	26	7	1.10	−0.41	Tye	4.87	Mottinger	0.03
West Virginia	66.7	−2.6	White Sulphur Springs.	96	20	Bayard	33	1	7.37	+2.76	Pickens	11.69	Upper Tract	1.55
Wisconsin	60.2	−4.3	3 stations	88	[2]22	Solon Springs	26	3	4.24	+0.25	Brodhead	7.45	Plum Island	2.47
Wyoming	53.9	−5.3	Wheatland	96	30	Hunter's Station	18	1	3.01	+1.42	Dome Lake	6.76	Green River	0.15
Alaska														
Hawaii														
Porto Rico	78.5	0.2	Arecibo	96	18	2 stations	59	14	2.91	−3.60	Maricao	6.00	Santa Rita	0.35

[1] For description of tables and charts, see REVIEW, January, p. 29.

[2] Other dates also.